

ening, vegetable oils, animal fats, etc. and then may be incorporated into the oil phase of the margarine. In the commercial practice of this invention, oils similar to those used in the margarine composition will generally be preferred. Such oils are hydrogenated cottonseed oil, hydrogenated soya oil, and mixtures thereof, and for purposes of a broad classification may be termed "margarine oils." However, we do not propose this term as one limited to the oils mentioned hereinabove, but we desire to include any oil which might be used for this purpose, i. e., as a carrier for the alcohol-insoluble moiety. "Margarine oil" includes, therefore, such carriers as oleostearine, coconut oil, liquid soya oil, hydrogenated corn oil and the like. Said oils, although not commonly used in margarine manufacture, could be used in this connection and hence are included in the broad definition along with other suitable liquid or plastic oils. The copending application of P. L. Julian and H. T. Iveson, Serial No. 232,868, filed June 21, 1951, describes and claims dispersions of the alcohol-insoluble moiety of vegetal phosphatides in carriers, and describes and claims a process for preparing such dispersions.

We have found that the anti-spattering effects of the alcohol-insoluble moiety may be further enhanced by intimately mixing with it more than about 0.1% but not more than about 1% of protein, such as isolated edible soya protein, enzyme hydrolyzed protein, or alkali-soluble, acid-precipitable vegetable seed protein. Intimate dispersion of the protein into the alcohol-insoluble fraction is necessary to secure such enhancement, however, and may be conveniently achieved by dispersing the protein and the alcohol-insoluble fraction in water. If desired, the dispersion may then be dried. Whether in a wet state, or dry, the dispersion may then be incorporated into the water phase of the margarine. The optimum effect of the intimately dispersed protein appears to be secured when the protein amounts to about 0.5% of the oil-free alcohol-insoluble moiety of an oil-containing preparation of the alcohol-insoluble fraction. About 0.1% of such a material on an oil-free basis is effective in overcoming spattering when uniformly dispersed in margarine.

The following examples are given by way of illustration in order that those skilled in the art may better practice the invention. The examples represent preferred modes of carrying out the invention. Proportions of ingredients used in the examples are, unless otherwise stated, on a weight basis.

#### Example 1

Crude vegetable phosphatides were washed with an equal volume of ethyl alcohol eight separate times. The residual alcohol on the alcohol-insoluble moiety was removed by drying under vacuum. This moiety was dissolved in the oil phase of the margarine in the amount of 0.1% of the final margarine weight. A margarine was produced having superior frying characteristics and minimized spatter.

A margarine produced from the crude vegetable phosphatides was inferior to that produced from the alcohol-insoluble moiety and a margarine produced from the alcohol-soluble fraction was extremely poor.

#### Example 2

A sample of the alcohol-insoluble moiety produced by first removing the oil from the crude soybean phosphatides by washing repeatedly with acetone and then extracting the oil-free phosphatides with ethanol as in Example 1 was dissolved in the water phase of the margarine in an amount of 0.1% of the final margarine weight. The margarine produced was of better quality in frying characteristics than one produced using 0.25% of the crude soybean phosphatides.

#### Example 3

A sample of the alcohol-insoluble moiety produced

as in Example 2 was dissolved in a margarine oil (a mixture of hydrogenated cottonseed and soya oils in the approximate ratio of 70% to 30% by weight) to produce a product containing 75% alcohol-insoluble material and 25% margarine oil. This product was added to a margarine mix in amount of 0.1% and prevented spattering exceptionally well in the resulting margarines.

#### Example 4

An alcohol-insoluble moiety prepared as in Example 1 was thoroughly mixed in water with 0.5% of a water-soluble enzyme-hydrolyzed alkali metal globulinate, and the resulting uniform dispersion was dried. 0.1% of this product added to margarine gave results in eliminating spattering during frying equivalent to 0.25% of a product composed of crude vegetable phosphatides similarly combined with a water-soluble enzyme hydrolyzed alkali metal globulinate.

It is to be understood that the foregoing examples are illustrative and that modifications may be made therein without departing from the invention. Thus in place of whole soya lecithin, other whole vegetable lecithins such as corn phosphatides may be employed. Methods other than alcohol extraction which essentially effect a concentration of the alcohol-insoluble moiety are within the scope of this invention. In other words, the method by which the fraction corresponding to that which we herein call the alcohol-insoluble moiety is actually separated or concentrated should constitute no limitation on the inventions hereinafter claimed.

Having described our invention, what we claim is:

1. An improved margarine containing a small amount above about 0.05% of the alcohol-insoluble moiety of whole vegetable lecithins and substantially free of the alcohol-soluble moiety of said vegetable lecithins, said improved margarine being characterized by substantial freedom from spattering and a sticky residue, and by the development of a quiescent layer of foam on its surface, when heated to frying temperatures.
2. An improved margarine as claimed in claim 1 wherein the amount of the alcohol-insoluble moiety is between about 0.10% and 0.30% by weight of the margarine.
3. An improved margarine as claimed in claim 1 wherein said alcohol-insoluble moiety is composed in major amount of inositol phosphatides.
4. An improved margarine as claimed in claim 3 wherein the amount of said alcohol-insoluble moiety is between about 0.10% and 0.30% by weight of the margarine.
5. An improved margarine as claimed in claim 1 which includes a small percentage of protein by weight of said alcohol-insoluble moiety in intimate association with the latter.
6. An additive for margarine comprising the alcohol-insoluble moiety of whole vegetable lecithins in a carrier of margarine oil, said additive being substantially free of the alcohol-soluble moiety of said whole vegetable lecithins.
7. An additive for margarine comprising the alcohol-insoluble moiety of whole vegetable lecithins having protein in intimate association therewith in an amount between about 0.1% and 1% by weight of said moiety, said additive being substantially free of the alcohol-soluble moiety of said whole vegetable lecithins.

#### References Cited in the file of this patent

##### UNITED STATES PATENTS

Re. 19,767	Reynolds	Nov. 26, 1935
1,917,259	Harris	July 11, 1933
2,029,261	Ginn	Jan. 28, 1936
2,090,537	Lund	Aug. 17, 1937
2,640,780	Mattikow	June 2, 1953